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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,556	03/12/2004	Hiromasa Sato	250241US3CONT	6465

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ALEXANDRIA, VA 22314		

EXAMINER	
CHANG, AUDREY Y	

ART UNIT	PAPER NUMBER
2872	

NOTIFICATION DATE	DELIVERY MODE
12/04/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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TH

Office Action Summary	Application No.	Applicant(s)	
	10/798,556	SATO ET AL.	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-7 and 12-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-7 and 15 is/are allowed.
- 6) ☒ Claim(s) 12-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **September 12, 2007** has been entered.
2. This Office Action is also in response to applicant's amendment filed on **August 7, 2007**, which has been entered into the file.
3. By this amendment, the applicant has amended claims 4, 12, and 14.
4. Claims 4-7, and 12-15 remain pending in this application.

Response to Amendment

5. The amendment filed on **August 7, 2007** is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: **claim 12 has been amended** to include the phrase "when incoming-side diffraction grating is configured ... such that only a center portion of the external light, having a stronger intensity than a peripheral portion ... is not diffracted by the incoming side diffraction grating" and **claim 14 has been amended** to include the phrase "a second diffraction disposed in the second surface ... to receive light not diffracted by the first diffraction grating, the second diffraction grating having a second grating pitch substantially equal to the first grating pitch".

Claim 12 are drawn to embodiments as shown in Figure 2, wherein the specification fails to disclose explicitly that the "only a center portion of the external light, having a stronger intensity than a peripheral portion ... is not diffracted by the incoming side diffraction grating".

Claim 14 are drawn to embodiment as shown in Figure 1, wherein paragraphs [0086] and [0087] teaches explicitly that the grating pitch for the incoming side diffraction (or first grating as designed in claim 14) grating is 1.15 μm , the grating pitch for the third diffraction grating (105, Figure 1) is 1.15 μm and the grating pitch for the second diffraction grating (103) for receiving light not diffracted by the first diffraction grating is 20 μm . This means the grating pitch for the second diffraction grating cannot be substantially equal to the grating pitch of the first diffraction grating.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 12-14 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on newly added matters are set forth in the paragraphs above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nakanishi et al (PN. 6,728,034) in view of the patent issued to Morton et al (PN. 5,999,318).**

Nakanishi et al teaches a *diffraction optical element* that is comprised of a transparent *substrate* (1, Figures 6, 7A, 7B, 10 and 22), wherein a first *diffraction grating pattern* (4), serves as the *incoming-side diffraction grating*, is formed on the *central region* of the incoming-side surface of the *transparent substrate* wherein an external light incidents (L_0), and at least one *second diffraction gratings* (5 and 6, or 9 and 10), serves as the *first outgoing-side diffraction and second outgoing-side diffraction grating*, formed on the opposite (or *outgoing-side*) surface, (with respect to the first diffraction grating pattern), of the substrate. Nakanishi et al teaches that the *pitch* of the incoming side diffraction grating pattern is the *same* as the *pitch* of the outgoing-side diffraction grating pattern, (please see column 3, lines 38-40 and column 10, lines 40-52). Nakanishi et al further teaches that each of the first and second diffraction grating patterns comprises a plurality of *slits* and as demonstrated by the drawings 1-17 and 19A, the slit pattern comprises *concave/convex shape*, (please see columns 3-4, 6, 8, and 10). Nakanishi et al teaches that the first and second outgoing-side diffraction gratings (5 and 6) is configured to receive the light **diffracted** from the incoming-side diffraction grating (4), which *means the second outgoing-side diffraction grating positioned on a light path of a light diffracted by the incoming-side diffraction grating*. Nakanishi et al teaches that the outgoing side diffraction grating can be designed to be **reflective** grating, as demonstrated in Figures 6, 7A, and 7B).

With regard to the feature concerning a reflective layer covers the second outgoing-side diffraction grating as recited in claim 12, Nakanishi et al teaches that the outgoing-side diffraction gratings (5 or 6) can be reflective diffraction grating but it does not teach explicit to include a reflective

layer for covering the diffraction grating. But it is standard practice in the art to make a reflective grating by using a reflective layer covering a transmission diffraction grating, as explicitly taught by **Morton et al**, (please see Figures 4 and 9). It would then have been obvious to make the reflective diffraction grating by using a reflective layer to cover the transmission diffraction grating for the benefit of actually making the reflective diffraction grating.

With regard to the feature that the grating pitch of the grating pitch of the second outgoing diffraction grating is substantially equal to the grating pitch of the incoming side diffraction grating, **Nakanishi et al** teaches that the *pitch* of the incoming side diffraction grating pattern is the *same* as the *pitch* of the outgoing-side diffraction grating pattern, (please see column 3, lines 38-40 and column 10, lines 40-52). This means the outgoing diffraction grating has grating pitch substantially equal to the grating pitch of the incoming side diffraction grating.

With regard to the amended feature of “the incoming-side diffraction grating is configured relative to the light source such that only a center portion of the external light having a stronger intensity than a peripheral portion of the external light not diffracted the incoming side diffraction grating”, this feature is rejected under 35 USC 112, first paragraph, as new matters not supported by the specification, (please see the reasons above). This is a condition relates to **how to employ the** diffraction optical element. One skilled in the art would certainly able to provide a light source such that only central portion of the incident light beam, having a stronger intensity, to be not diffracted by the incoming side diffraction grating, i.e. to provide zero order diffraction light. It has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Madham*, 2 USPQ2d 1647 (1987).

Nakanishi et al also teaches that the diffractive optical element can be used in an optical pickup device, which could be considered as a wavelength measurement apparatus.

With regard to claim 13, the Nakanishi et al reference teaches that the outgoing side diffraction gratings may have *saw-tooth like shape* (9 and 10 in Figure 10), however it does not teach explicitly that the incoming diffraction grating is of saw-tooth shape. But one skilled in the art would understand that the profiles or shapes of the diffraction grating are considered to obvious design choice to one skilled in the art as long as the diffraction grating performs the same function, which in this case is to diffract the incoming external light to reach the outgoing diffraction gratings.

Allowable Subject Matter

10. Claims 4-7 and 15 are allowed over the prior art of the record.
11. The following is a statement of reasons for the indication of allowable subject matter: of the prior art references considered, none has disclosed a *diffraction element* having a *substrate* with an *incoming-side diffraction grating* having a concave/convex shape *disposed in the central region of the incoming-side surface of the substrate*, a *first outgoing-side diffraction grating* having a concave/convex shape disposed in the outgoing-side surface of the substrate to *receive the light not diffracted* by the incoming-side diffraction grating and a *second outgoing-side diffraction grating covered by a reflective layer* having a concave/convex shape disposed in the outgoing-side surface of the substrate and *in the light path of the diffracted light* by the incoming-side diffraction grating. The grating pitch of the second outgoing-side diffraction grating is the same as the grating pitch of the incoming-side diffraction grating. The incoming-side diffraction grating is configured to relate to an external light source such that only a center portion of the external light having stronger intensity than a peripheral portion of the external light is *not diffracted* by the incoming-side diffraction grating.

Response to Arguments

12. Applicant's arguments filed on September 12, 2007 have been fully considered. The newly amended claims have been fully considered and addressed as explicitly stated above.

Application/Control Number:
10/798,556
Art Unit: 2872

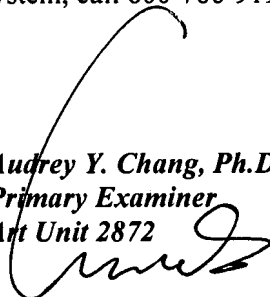
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephane B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872



A. Chang, Ph.D.